

Notice of Allowability

Application No.

09/982,413

Examiner

Scott R. Wilson

Applicant(s)

KIANIAN ET AL.

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Petition to Withdraw from Issue and RCE filed 10 May 2004.

2. ☒ The allowed claim(s) is/are 1-28,55-65 and 69-74.

3. ☒ The drawings filed on 12 April 2004 are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 10 May 2004

4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.

7. ☐ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: Krautschneider, Figures 5-8, discloses an electrically programmable and erasable memory device comprising a substrate of semiconductor material (2) of a first conductivity type, a trench (4) formed into a surface of the substrate, first and second spaced-apart regions (12, neighboring pairs) formed in the substrate and having a second conductivity type, with a channel region therebetween, which is disclosed to run between neighboring regions (12) linearly horizontal under the floating gate (6") (col. 8, lines 14-22), wherein the second region is formed underneath the trench [the overlap region between a doped region (12) and the trench comprising (11'), (10) and (6"), best seen in Figure 6]. Krautschneider further discloses an electrically conductive floating gate (6") disposed over and insulated from at least a portion of the channel region and a portion of the first region [the overlap region between a doped region (12) and the trench comprising (11'), (10) and (6"), best seen in Figure 6], an electrically conductive control gate (11') having a first portion disposed in the trench, and insulation material disposed between the floating gate and the control gate (10) and having a thickness permitting Fowler-Nordheim tunneling of charges (col. 1, line 23) therethrough.

Krautschneider, however, does not disclose or teach any channel region extending substantially along a sidewall of the trench. As cited above, the channel region of Krautschneider runs linearly horizontal under the floating gate (6"). Figures 6 and 7 disclose that there are two planes of channels, a lower plane between regions (12) of Figure 6, and an upper plane between regions (12) of Figure 7. The two planes of channels are not electrically connected and are controlled by the upper and lower planes of floating gates (6"), shown in Figure 5. The vertically offset planes of channel serve to increase the packing density of memory cells (col. 8, lines 63-65).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2826

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 571-272-1925. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

srw